DOCUMENT RESUME

ED 055 575 HE 002 637

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TITLE	Mid-Year Progress Report. Project PRIME Report, Number 14.
INSTITUTION	Minnesota Higher Education Coordinating Commission, St. Paul.
REPORT NO	PRIME-14
PUB DATE	Jan 71
NOTE	10p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Computer Oriented Programs; *Higher Education; *Models; *Planning; Simulation
IDENTIFIERS	*Planning Resources in Minnesota Education; Project PRIME

ABSTRACT

This report discusses the objectives and progress to date of Project PRIME: Planning Resources in Minnesota Education. These include: (1) testing the CAMPUS model at 3 institutions; (2) training to use the model; (3) developing compatible planning tools; (4) research on program analysis and faculty activities; (5) linking CAMPUS to institutional information systems; and (6) highlighting problem areas requiring further research. The report also lists some additional goals that have arisen since the proposal was made, including documentation, program costing, model changes, and involving other academic organizations in the project; and presents some financial information. (AF)

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Project PRIME Report No. 14

Mid-Year Progress Report

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January 1971

Project PRIME Research Coordinated by the
Minnesota Higher Education Coordinating Commission

HE002637

Mid-Year Progress Report

1.0 INTRODUCTION

Project PRIME (Planning Resources in Minnesota Education) is a one year research project jointly funded by the Minnesota State College System, the Minnesota Junior College System, the University of Minnesota, the State of Minnesota, and the Hill Family Foundation. The research is being coordinated by the Minnesota Higher Education Coordinating Commission. Initial approval for the project's funding was based on a March 1970 report entitled "Test Implementation of CAMPUS for Higher Education Administration and Planning in Minnesota".* This report outlined six major objectives of the project, an implementation schedule, responsibility of participating institutions, and a proposed budget. Project PRIME Report No. 2 provides further information on Project PRIME and a brief description of the CAMPUS model.

2.0 PROJECT OBJECTIVES AND PROGRESS TO DATE

Project PRIME's objectives and approximate level of required staff effort (expressed as a %) are as follows:

(1) Testing CAMPUS at three institutions (50%);
(2) Training in using the model (10%);
(3) Developing compatible planning tools (5%);
(4) Research on program analysis and faculty activities (25%);
(5) Linking CAMPUS to institutional information systems (5%);
(6) Highlighting problem areas requiring further research (5%).
(Section 3.0)

2.1 TESTING CAMPUS:

The project's primary objective is the test implementation of the CAMPUS V simulation model in one State College (Bemidji - Behavioral Science Division), in one Junior College (Lakewood) and in one school at the University of Minnesota (School of Business Administration). Exhibit 1 is a schedule of the specific tasks needed to complete the implementation. The cross-hatching represents the approximate % of these tasks that are completed as of January 1, 1971.

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*Available as Project PRIME Report No. 1.

The first step of the test implementation involved conversion of the CAMPUS computer program from the IBM 360/85 to the University's CDC 6600. The conversion process has been completed and we are able to duplicate the test data provided with the model. Exhibit 2 indicates in more detail the steps of this conversion process.

In parallel with the conversion process, we found it necessary to develop an input documentation manual. This manual explains data requirements and formats for each of the 70 different input forms. Also included in the manual are several exhibits indicating sample data.

The next major step in the test implementation, as shown on Exhibit 1, involved developing a program structure and collecting data at each of the three institutions. Data collection for the School of Business is complete for the 1969/70 school year and three "test runs" have been processed.

Bemidji data collection is approximately 60% finished, and should be completed by January 29th. Lakewood Junior College has just begun data collection and should be finished by the end of February as planned.

2.2 TRAINING:

The project proposal indicated that training would be offered at three levels: (1) top administrative - for appreciation and interpretation of the model and its results; (2) second level administrative - for updating the structural aspects of the model; and (3) data analyst - for procedures on updating and maintaining the detailed data needed by the model. The training would involve a thorough understanding of: (1) the concepts of planning, programming and budgeting systems (PPBS); and (2) the operational aspects of the CAMPUS model.

To date the following items have contributed to accomplishing these training goals - (1) Most of the institutional personnel associated with the project, including the Presidents of Bemidji and Lakewood, and the Dean of the Business School; attended a two-day "WICHE Management Information Systems Program Training Seminar"; (2) Introductory sessions on CAMPUS were held at both Bemidji (2 sessions) and the Business School. The Business School session included the faculty. (3) Approximately six training sessions on data collection have been held with Bemidji personnel plus two with Lakewood. (None at the SBA because project team is doing the data collection.)

2.3 COMPATIBLE PLANNING TOOLS: Only a small amount of effort has been directly expanded on this objective.

2.4 PROGRAM ANALYSIS AND FACULTY ACTIVITIES: This objective involves work on the two Ph.D. dissertations that are included in the project. Their status is discussed in PRIME Report No. 2.

2.5 INSTITUTIONAL DATA BASE LINKING: Initial work has been started on a "Faculty Activity Information Subsystem".*

3.0 ADDITIONAL GOALS WHICH HAVE RISEN SINCE THE PROPOSAL

DOCUMENTATION - The documentation received from the Ford Foundation Project at Toronto was incomplete. There are three categories of documentation that were either missing or weak: (1) A user input data manual as explained above; (2) Technical documentation - this includes comments in computer code plus adequate subroutine descriptions; and (3) User Experimentation - little documentation has been provided on how administrators can use the model to evaluate various alternatives. To aid us in structuring this documentation, we have hired a consultant from Control Data.

PROGRAM COSTING - The descriptive material on the CAMPUS model from the University of Toronto indicated that the computer code was capable of computing costs both for programs and cost centers. However, the computer code which was released was incapable of computing program costs. The program costing feature is necessary to provide administrators with information for program planning. As shown on Exhibit 1, we are building this feature into the model.**

MODEL CHANGES - Approximately 20 desirable changes to the model have been documented. Many of these will be accomplished during the remainder of the project. One particularly desirable change that should be done, but will probably not be due to time limitations, is expansion of the model to handle a larger institution. The present model is limited to 80 program elements (primarily degrees) and 25 cost centers. These limitations are caused by computer memory restrictions. Basically the expansion would involve re-programming the model to transfer information that is now stored in computer memory to a disk file. Approximately 6 man months of effort would be required for this effort (assuming that the present project programmers do the work).

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*For additional detail see Project PRIME Report No. 7, "A Faculty Activity Information Subsystem and CAMPUS-MINNESOTA."

**For additional detail see Project PRIME Report No. 5, "Program Costing with CAMPUS-MINNESOTA: A Philosophic Note."

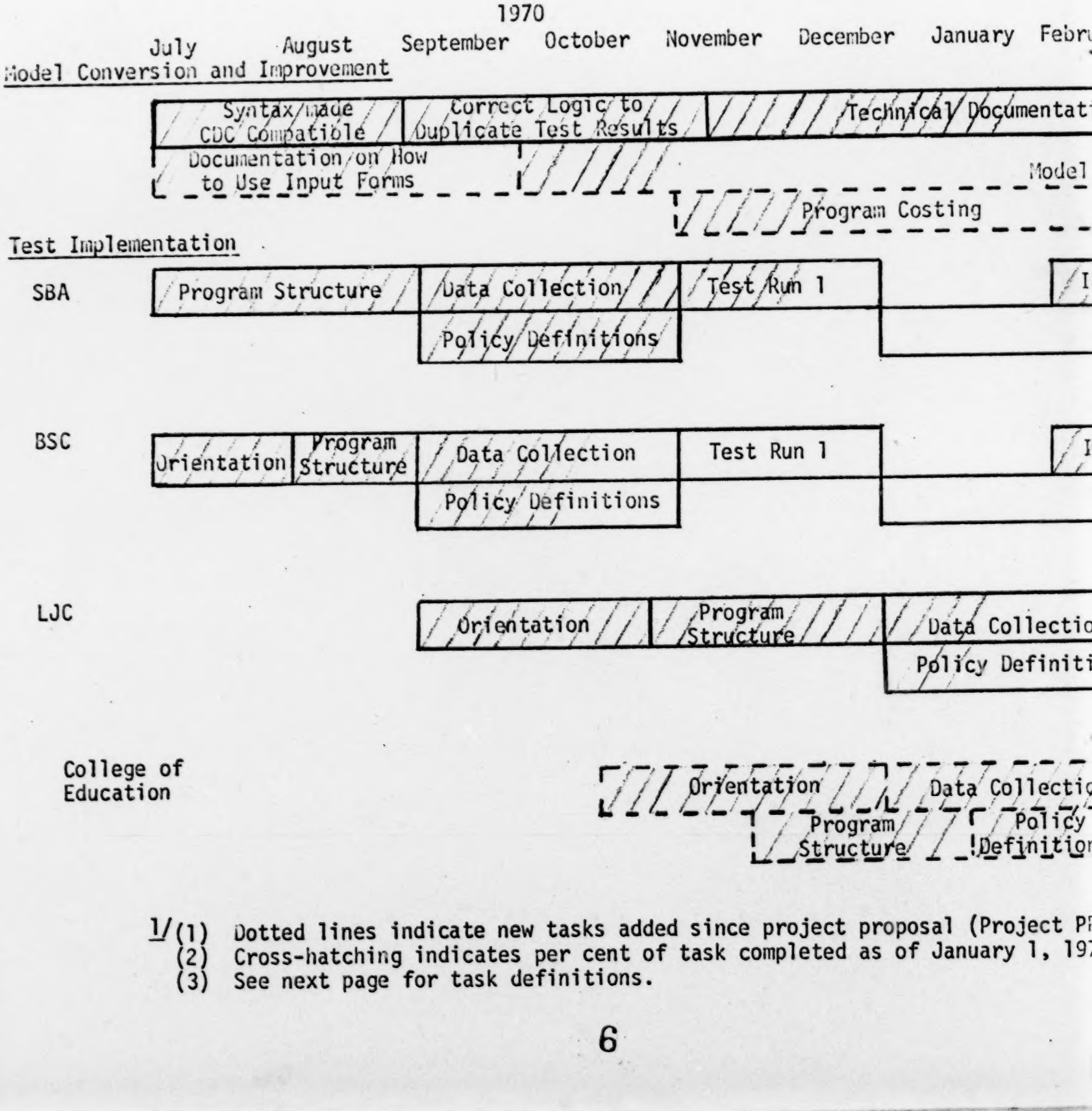
ADDITIONAL ACADEMIC ORGANIZATIONS - Macalester College and the School of Education at the University of Minnesota have asked to actively participate in the project. After discussion with the advisory committee, we have agreed to train and advise personnel from these schools. It will be the responsibility of each unit to provide support personnel plus computer expenses. No additional funding will be needed to add these units.

4.0 FINANCIAL INFORMATION

Exhibit 3 is a Financial Statement as of December 31, 1970, showing source of funds, funds expended, and estimated needs for the remainder of the project. The slight surplus results from sharing office space with other Commission members and a reduction of rental charges. We anticipate using these funds to further develop the link between the simulation model and existing institutional data bases (objective 5).

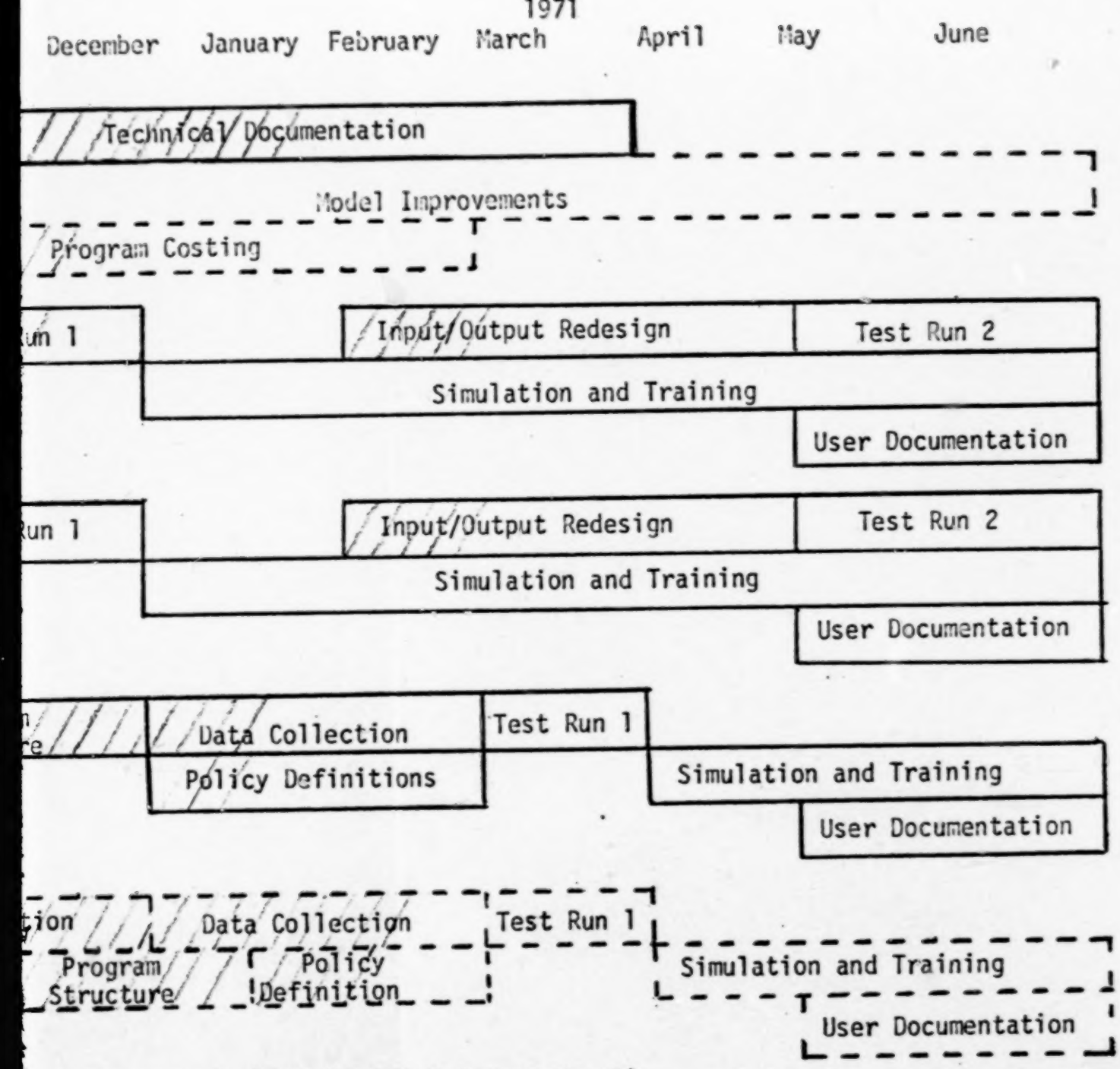
Exhibit 4 is an approximate program budget for the project showing the funds expended, the remaining expenditures and the total funds.

Exhibit 1
Project Schedule[1]/



1/ (1) Dotted lines indicate new tasks added since project proposal (Project P
(2) Cross-hatching indicates per cent of task completed as of January 1, 19
(3) See next page for task definitions.

Exhibit 1
oject Schedule[1]



roject proposal (Project PRIME Report No. 1).
pleted as of January 1, 1971.

EXHIBIT 1 (continued)

LEGEND

TASK DEFINITION

Program Structure: This task refers to the identification of programs, subprograms, and activities that will make up the programs structure.

Data Collection: This task refers to the collection of data on space inventories, student distributions, staff resources, activity requirements and costs.

Policy Definitions: Parameters that will govern space allocation, staff allocation, costs of additional resources are developed in this task.

Test Runs 1: Data will be run through the model to test the model against existing conditions at the institution.

Simulate: The objective of this task is to allow the institution to experiment with the model.

Redesign Input/Output: Redesigning to make the input/output compatible with the particular institution. (Not necessary in Junior College.)

Test Runs 2: Testing of the revisions made in input/output redesign.

Documentation: Development of a manual on how to use CAMPUS as modified. It will be a guide to the institution on how to: experiment with the model, submit input, interpret the output.

Model Improvements: Upgrading of CAMPUS V to handle institutions other than Junior Colleges plus improvements in reporting capability.

Program Costing: This task will provide the "Linkages" necessary to convert budget data into "program" data.

1/5/71

Exhibit 2

Model Conversion

This exhibit explains in more detail the CAMPUS V model conversion from an IBM 360/85 to the University of Minnesota's CDC 6600. Exhibit 1 indicates the schedule for this conversion process.

Syntax Made CDC Compatible: The following tasks were involved in this effort.

1. Conversion of the IBM 360 FORTRAN differences to CDC 6600 FORTRAN.

2. Changes required to use extended core rather than internal core for common array storage in the CDC 6600.

3. Further modularization of routines to cut down on core size required.

Correct Logic to Duplicate Test Results: It was necessary to run the model with test data that was received with the model to check out the logic after it was converted. This involved comparing output based on the 360 version with output based on the converted 6600 version. These runs helped us access the accuracy of our conversion effort. They also pointed up minor errors in the report modules. Part of the logic had not been used previously. Some corrections had to be made to this part before the model would run.

Technical Documentation: This effort involved the following tasks:

1. Analysis and documentation of what each module in the model does statement by statement.

2. Documentation of the overall flow of the model.

3. Documentation of model restraints.

Documentation of How to Use Input Forms: A large effort that was added to the conversion effort was an analysis and documentation of how to use the input forms. Each data element on the forms had to be defined (i.e., what values a data element can have and how the data elements are related to each other logically). The following tasks have been completed as a result of this effort.

1. Verification of input formats with the model.

2. Development of a users manual on how to fill out the input forms.*

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*See Project PRIME Report No. 12, "Input Command: Draft Documentation," November, 1970.

Exhibit 3

Financial Statement - December 31, 1970

Project PRIME

Source of Funds

	HECC	Gov.'s Computer Committee	U of M	SCS	JCS	Hill	Total Funds	Funds Expended Thru Dec. 31	Available	Estimated Needs	Balance
Director	$	$	$	$	$	$16,000	$ 16,000	$ 8,000	$ 8,000	$ 8,000	$ 0
Assoc. Dir.(1)		13,200					13,200	6,600	6,600	6,600	0
Assoc. Dir.(2)		11,550					11,550	4,950	6,600	6,600	0
Prog./Analyst						7,500	7,500	4,920	2,580	3,840	-1,260
Prog./Analyst						6,250	6,250	4,100	2,150	3,200	-1,050
Prog./Analyst						6,250	6,250	1,060	5,190	5,720	-530
Data Analyst						5,000	5,000	308	4,692	2,000	2,692
Data Analyst		1,250				750	2,000	180	1,820	1,820	0
Clerical	2,000	4,000					6,000	2,267	3,733	3,733	0
Keypunching	2,000						2,000	190	1,810	1,000	810
Fringe Benefits						3,894	3,894	1,651	2,243	2,243	0
Travel	2,000						2,000	852	1,148	1,148	0
Office Space	6,000						6,000	1,396	4,604	1,675	2,929
Communications & Equipment	2,400						2,400	767	1,633	1,633	0
Computer			6,000				6,000	5,397	603	2,000	-1,397
Tapes & Discs			2,000				2,000	165	1,835	500	1,335
Reports & Reproduction			3,000				3,000	179	2,821	2,821	0
At-Test sites											
Admin. (1)			7,000				7,000	2,500	4,500	4,500	0
Admin. (2)				7,000			7,000	2,800	4,200	4,200	0
Admin. (3)					7,000		7,000	1,750	5,250	5,250	0
Data Anal.(1)			5,000				5,000	0	5,000	5,000	0
Data Anal.(2)				5,000			5,000	2,000	3,000	3,000	0
Data Anal.(3)					5,000		5,000	0	5,000	5,000	
Totals	14,400	30,000	23,000	12,000	12,000	45,644	137,044	52,032	85,012	81,483	3,529

1/5/71

Exhibit 4

Program Budget

Project PRIME

		Funds Expended Thru Dec. 31, 1970	Funds Available until July, 1971	Total Funds
1.0	Test Implementation and Conversion	$33,400	$32,600	$ 66,000
	Model Conversion	(14,100)	(2,000)	(16,100)
	Technical Documentation	(4,300)	(5,000)	(9,300)
	Input Documentation	(2,700)	(1,000)	(3,700)
	Data Collection	(9,100)	(10,000)	(19,100)
	Model Redesign and Improvement	(3,200)	(14,600)	(17,800)
2.0	Training in Model Use	5,600	6,800	12,400
3.0	Developing Planning Tools	900	5,300	6,200
4.0	Program Analysis and Faculty Activities	4,000	26,000	30,000
5.0	Linking CAMPUS to Institutional Information Systems	100	6,100	6,200
6.0	Identifying Future Research	-	3,200	3,200
7.0	Administering Project*	8,000	5,000	13,000
		$52,000	$85,000	$137,000

*Project Administration includes clerical salaries, office space, telephone expenses, etc.

1/5/71